

**WHAT IS CLAIMED IS:**

1           1. A compound that binds to a cysteine residue in the RNA-dependent  
2 RNA polymerase (RdRp) protein of a virus forming a covalent bond.

1           2. A compound of Claim 1, wherein said RdRp protein is NS5B.

1           3. A compound of Claim 1, wherein said virus is hepatitis C virus  
2 (HCV).

1           4. A compound of Claim 1, wherein said cysteine residue corresponds  
2 to cysteine 366 in HCV NS5B.

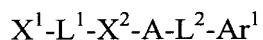
3           5. A compound of Claim 1, wherein said RdRp is NS5B and said  
4 virus is HCV.

1           6. A compound of claim 5, wherein said covalent bond is irreversible  
2 under physiological conditions.

1           7. A compound of claim 5, wherein said covalent bond is reversible  
2 under physiological conditions.

1           8. A compound of claim 1, wherein said covalent bond results from a  
2 reaction selected from the group consisting of a Michael addition of said cysteine residue  
3 to an activated double or triple bond in said compound, an aromatic or aliphatic  
4 nucleophilic substitution reaction of said cysteine residue with an electrophilic center in  
5 said compound, a thioester forming reaction between said cysteine residue and a  
6 carboxylic acid or carboxylic acid derivative in said compound, a disulfide forming  
7 reaction between said cysteine residue and a sulfur-containing group in said compound,  
8 and a hemi-thioketal forming reaction between said cysteine residue and an activated or  
9 unactivated carbonyl group in said compound.

1           9. A compound useful for the covalent modification of a viral RNA-  
2 dependent RNA polymerase (RdRp) protein, said compound having the formula (I):



3           wherein

4

0 9 8 7 6 5 4 3 2 1 0

5 A is a electrophilic group that reacts with a cysteine residue of said RdRp  
6 protein;

7 Ar<sup>1</sup> is a member selected from the group consisting of substituted or  
8 unsubstituted aryl and substituted or unsubstituted heteroaryl;

9 X<sup>1</sup> is a member selected from the group consisting of -H, substituted or  
10 unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted  
11 heteroaryl, -CN, -CO<sub>2</sub>H, -SO<sub>3</sub>H, -C(O)NHOH, -NH<sub>2</sub>, -OH, -NH(lower alkyl), -O(lower  
12 alkyl), -N(lower alkyl)<sub>2</sub>, and -C(O)-NH(3-tetrazolyl);

13 L<sup>1</sup> is a divalent linking group selected from the group consisting of  
14 -CH<sub>2</sub>CH<sub>2</sub>-, -CH=CH-, -C≡C-, -O-, -S(O)<sub>n</sub>-, -N(R<sub>a</sub>)-, -C(O)-, -C(O)O-, -SO<sub>2</sub>N(R<sub>a</sub>)-,  
15 -CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-, -N(R<sub>a</sub>)N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>-, -N(R<sub>a</sub>)-O-,  
16 =N-O-, lower alkylene, -O-lower alkylene, -S(O)<sub>n</sub>-lower alkylene, N(R<sub>a</sub>)-lower alkylene,  
17 -SO<sub>2</sub>N(R<sub>a</sub>)-lower alkylene, lower alkylene-SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-lower alkylene, lower  
18 alkylene-CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-lower alkylene, lower alkylene-N(R<sub>a</sub>)N(R<sub>b</sub>)-,  
19 -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-lower alkylene, -N(R<sub>a</sub>)-O-lower alkylene, lower alkylene-N(R<sub>a</sub>)-O-,  
20 =N-O-lower alkylene, lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower  
21 heteroalkylene, N(R<sub>a</sub>)-lower heteroalkylene, -SO<sub>2</sub>N(R<sub>a</sub>)-lower heteroalkylene, lower  
22 heteroalkylene-SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-lower heteroalkylene, lower  
23 heteroalkylene-CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-lower heteroalkylene, lower  
24 heteroalkylene-N(R<sub>a</sub>)N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-lower heteroalkylene, -N(R<sub>a</sub>)-O-lower  
25 heteroalkylene, lower heteroalkylene-N(R<sub>a</sub>)-O-, =N-O-lower alkylene, aryl and  
26 heteroaryl;

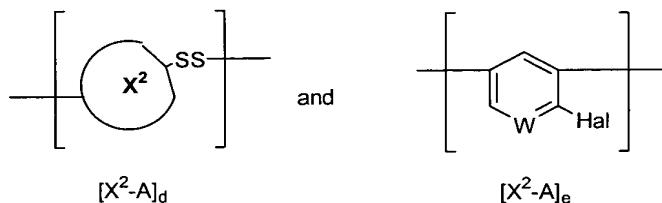
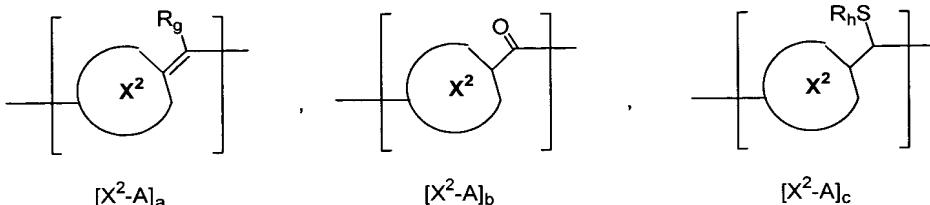
27 X<sup>2</sup> is a member selected from the group consisting of substituted or  
28 unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted  
29 cycloalkyl, and substituted or unsubstituted heterocycloalkyl;

30 L<sup>2</sup> is a divalent linking group selected from the group consisting of  
31 -CH<sub>2</sub>CH<sub>2</sub>-, -(C(R<sub>c</sub>)=C(R<sub>d</sub>))<sub>m</sub>-, -O-, -S(O)<sub>n</sub>-, -N(R<sub>e</sub>)-, -C(O)-, -C(O)O-, -SO<sub>2</sub>N(R<sub>e</sub>)-,  
32 -CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-, -N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-, -N(R<sub>e</sub>)-O-, =N-O-, lower  
33 alkylene, perfluoro lower alkylene, polyfluoro lower alkylene, -O-lower alkylene,  
34 -S(O)<sub>n</sub>-lower alkylene, N(R<sub>e</sub>)-lower alkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower alkylene, lower  
35 alkylene-SO<sub>2</sub>N(R<sub>e</sub>)-, -CON(R<sub>e</sub>)-lower alkylene, lower alkylene-CON(R<sub>e</sub>)-,  
36 -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower alkylene, lower alkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
37 alkylene, -N(R<sub>e</sub>)-O-lower alkylene, lower alkylene-N(R<sub>e</sub>)-O-, =N-O-lower alkylene,

38 lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower heteroalkylene, N(R<sub>e</sub>)-lower  
39 heteroalkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-SO<sub>2</sub>N(R<sub>e</sub>)-,  
40 -CON(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower  
41 heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
42 heteroalkylene, -N(R<sub>e</sub>)-O-lower heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)-O-,  
43 =N-O-lower alkylene, aryl and heteroaryl, wherein R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub> and R<sub>f</sub> are each  
44 members independently selected from the group consisting of H, lower alkyl, lower  
45 heteroalkyl, -C(O)-lower alkyl, -C(O)-lower heteroalkyl, -S(O)<sub>2</sub>-lower alkyl, and -  
46 S(O)<sub>2</sub>-lower heteroalkyl;  
47 the subscript n is an integer of from 0 to 2;  
48 the subscript m is an integer of from 0 to 3;  
49 the bond between X<sup>2</sup> and A can be a single, double or triple bond,  
50 depending on the nature of X<sup>2</sup> and A; and  
51 wherein when L<sup>1</sup> and L<sup>2</sup> may be linked together *via* a single bond, -O-, -S-  
52 or amide group to form a new 5 to 7 membered ring;  
53 with the proviso that when A is an sp<sup>2</sup>-hybridized carbon atom and X<sup>2</sup> is substituted or  
54 unsubstituted rhodanine, L<sup>1</sup> is not -CH<sub>2</sub>-CH<sub>2</sub>-, -CH=CH-, -C≡C- or aryl.

1           **10.**    A compound in accordance with claim 9, wherein  
2            X<sup>2</sup> is selected from the group consisting of a 5 to 7 membered cycloalkyl  
3    ring, a 5 to 7 membered heterocycloalkyl ring containing from 1 to 3 heteroatoms, an aryl  
4    group and a heteroaryl group;  
5            A is selected from the group consisting of an sp<sup>2</sup>-hybridized carbon atom  
6    and an sp<sup>3</sup>-hybridized carbon atom;  
7            L<sup>2</sup> is a single bond; and  
8            X<sup>2</sup> and A are joined *via* a single or double bond.

1           **11.**    A compound in accordance with claim 10, wherein  
2    X<sup>2</sup>-A- is selected from the group consisting of:



W is CH or N; Hal is a halogen atom; and

8                            $X^2$  is a substituted or unsubstituted member selected from the group  
9 consisting of a 5-6 membered cycloalkyl, 5-6 membered heterocycloalkyl containing  
10 from 1 to 3 heteroatoms, heteroaryl containing from 1 to 3 heteroatoms and aryl.

12. A compound having the formula (II):



wherein

4 Ar<sup>1</sup> is a member selected from the group consisting of substituted or  
5 unsubstituted aryl and substituted or unsubstituted heteroaryl;

6                           X<sup>1</sup> is a member selected from the group consisting of -H, substituted or  
7 unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted  
8 heteroaryl, -CN, -CO<sub>2</sub>H, -SO<sub>3</sub>H, -C(O)NHOH, -NH<sub>2</sub>, -OH, -NH(lower alkyl), -O(lower  
9 alkyl), -N(lower alkyl)<sub>2</sub>, and -C(O)-NH(3-tetrazolyl);

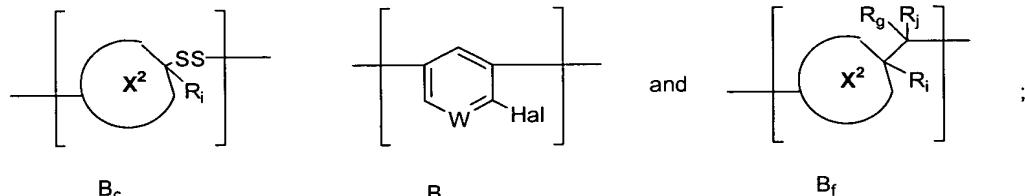
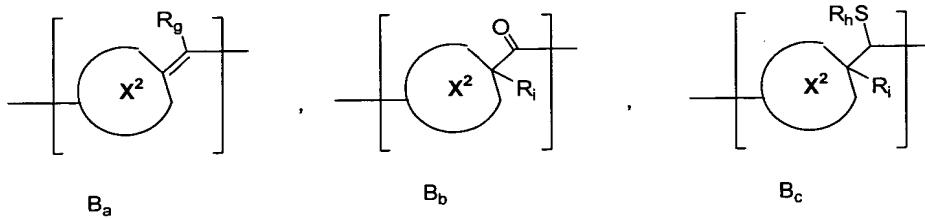
17     =N-O-lower alkylene, lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower  
18     heteroalkylene, N(R<sub>a</sub>)-lower heteroalkylene, -SO<sub>2</sub>N(R<sub>a</sub>)-lower heteroalkylene, lower  
19     heteroalkylene-SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-lower heteroalkylene, lower  
20     heteroalkylene-CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-lower heteroalkylene, lower  
21     heteroalkylene-N(R<sub>a</sub>)N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-lower heteroalkylene, -N(R<sub>a</sub>)-O-lower  
22     heteroalkylene, lower heteroalkylene-N(R<sub>a</sub>)-O-, =N-O-lower alkylene, aryl and  
23     heteroaryl;

24                 L<sup>2</sup> is a divalent linking group selected from the group consisting of  
25     -CH<sub>2</sub>CH<sub>2</sub>-, -(C(R<sub>c</sub>)=C(R<sub>d</sub>))<sub>m</sub>-, -O-, -S(O)<sub>n</sub>-, -N(R<sub>e</sub>)-, -C(O)-, -C(O)O-, -SO<sub>2</sub>N(R<sub>e</sub>)-,  
26     -CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-, -N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-, -N(R<sub>e</sub>)-O-, =N-O-, lower  
27     alkylene, perfluoro lower alkylene, polyfluoro lower alkylene, -O-lower alkylene,  
28     -S(O)<sub>n</sub>-lower alkylene, N(R<sub>e</sub>)-lower alkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower alkylene, lower  
29     alkylene-SO<sub>2</sub>N(R<sub>e</sub>)-, -CON(R<sub>e</sub>)-lower alkylene, lower alkylene-CON(R<sub>e</sub>)-,  
30     -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower alkylene, lower alkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
31     alkylene, -N(R<sub>e</sub>)-O-lower alkylene, lower alkylene-N(R<sub>e</sub>)-O-, =N-O-lower alkylene,  
32     lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower heteroalkylene, N(R<sub>e</sub>)-lower  
33     heteroalkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-SO<sub>2</sub>N(R<sub>e</sub>)-,  
34     -CON(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower  
35     heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
36     heteroalkylene, -N(R<sub>e</sub>)-O-lower heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)-O-,  
37     =N-O-lower alkylene, aryl and heteroaryl, wherein R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub> and R<sub>f</sub> are each  
38     members independently selected from the group consisting of H, lower alkyl, lower  
39     heteroalkyl, -C(O)-lower alkyl, -C(O)-lower heteroalkyl, -S(O)<sub>2</sub>-lower alkyl, and -  
40     S(O)<sub>2</sub>-lower heteroalkyl;

41                 the subscript n is an integer of from 0 to 2;

42                 the subscript m is an integer of from 0 to 3;

43                 B is selected from the group consisting of:



44

wherein X<sup>2</sup> is a substituted or unsubstituted member selected from the group consisting of a 5-6 membered cycloalkyl, 5-6 membered heterocycloalkyl containing from 1 to 3 heteroatoms, heteroaryl containing from 1 to 3 heteroatoms and aryl;

49

W is CH or N;

50

$R_g$  is selected from the group consisting of H, lower alkyl, lower alkoxy and F;

52

$R_h$  is selected from the group consisting of H,  $-S(O)_n$ -lower alkyl,  $-S(O)_n$ -lower heteroalkyl,  $-S(O)_n$ -aryl and  $-S(O)_n$ -heteroaryl;

54

$R_i$  is selected from the group consisting of H, lower alkyl, lower heteroalkyl, or a bond that links the atom bearing  $R_i$  with another atom in the  $X^2$  ring;

57

$R_j$  is selected from the group consisting of H, lower alkyl, F and lower alkoxy; and

59

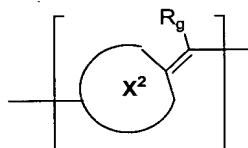
Hal is a halogen atom;

60

wherein when  $L^1$  and  $L^2$  may be linked together *via* a single bond, -O-, -S-, or -P- to form a new 5 to 7 membered ring;

62

with the proviso that when **B** is



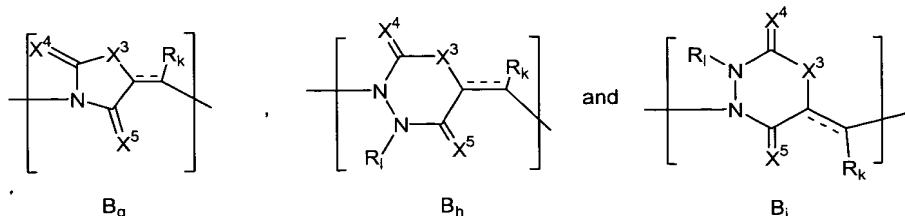
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B<sub>a</sub>

64

65 and  $X^2$  is rhodanine,  $L^1$  is not  $-\text{CH}_2\text{-CH}_2-$ ,  $-\text{CH}=\text{CH}-$ ,  $-\text{C}\equiv\text{C}-$  or aryl.

1                   13. A compound in accordance with claim 12, wherein B is selected  
2 from the group consisting of:



3                   4 wherein

5                   R<sub>k</sub> is selected from the group consisting of H, lower alkyl, lower  
6 heteroalkyl and F;

7                   R<sub>1</sub> is H or lower alkyl;

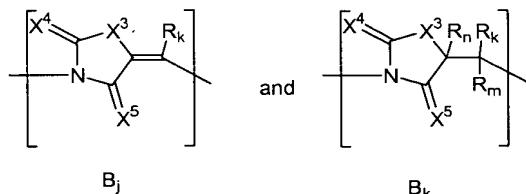
8                   X<sup>3</sup> is selected from the group consisting of O, S, CH<sub>2</sub>, CH(lower alkyl),  
9 C(lower alkyl)<sub>2</sub>, NH and N(lower alkyl);

10                  X<sup>4</sup> is selected from the group consisting of O, S, NH and N(lower alkyl),  
11 or X<sup>4</sup> and the carbon atom to which it is attached represents an sp<sup>3</sup>-hybridized carbon  
12 having two substituents independently selected from the group consisting of H, lower  
13 alkyl and lower heteroalkyl;

14                  X<sup>5</sup> is selected from the group consisting of O, S, NH and N(lower alkyl),  
15 or X<sup>5</sup> and the carbon atom to which it is attached represents an sp<sup>3</sup>-hybridized carbon  
16 having two substituents independently selected from the group consisting of H, lower  
17 alkyl, lower alkoxy, aryloxy, lower thioalkoxy and arylthioxy; and

18                  - - - represents either a single or double bond, with the proviso that when a  
19 single bond is intended, the ring atom bearing said single bond bears an additional  
20 substituent selected from the group consisting of H, lower alkyl, lower alkoxy and F.

1                   14. A compound of claim 13, wherein B is selected from the group  
2 consisting of:



3                   4 wherein

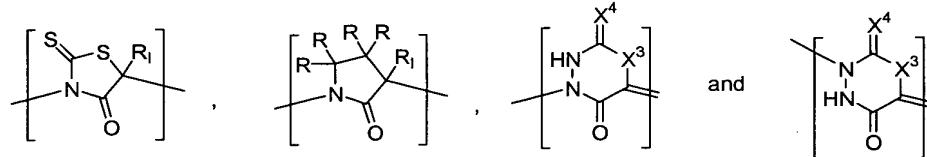
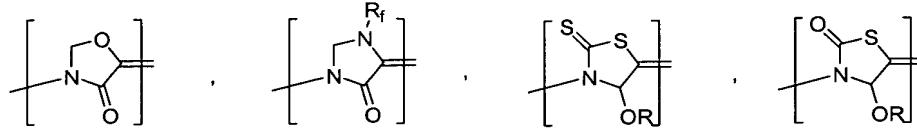
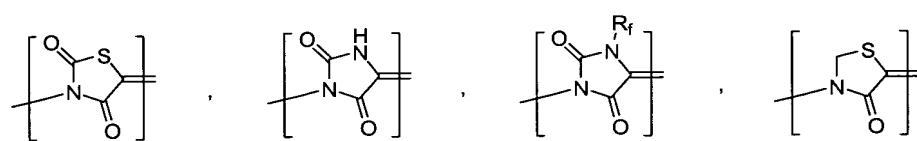
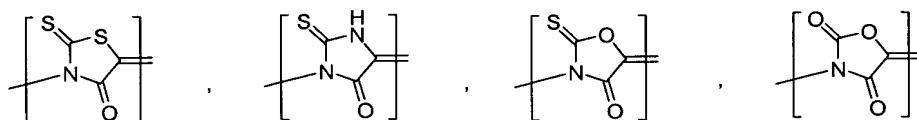
5                   R<sub>k</sub>, R<sub>m</sub> and R<sub>n</sub> are each independently selected from the group consisting  
6                   of H, F, lower alkyl and lower alkoxy;

7                   X<sup>3</sup> is selected from the group consisting of O, S, C(lower alkyl)<sub>2</sub>, NH and  
8                   N(lower alkyl);

9                   X<sup>4</sup> is selected from the group consisting of O and S, or X<sup>4</sup> and the carbon  
10                  atom to which it is attached represents an sp<sup>3</sup>-hybridized carbon having two substituents  
11                  independently selected from the group consisting of H, lower alkyl and lower heteroalkyl;

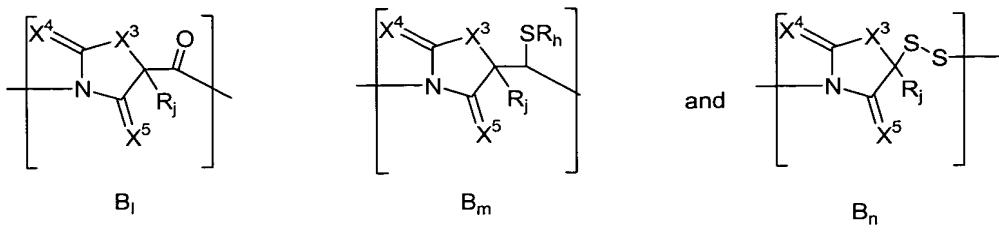
12                  X<sup>5</sup> is selected from the group consisting of O and S, or X<sup>5</sup> and the carbon  
13                  atom to which it is attached represents an sp<sup>3</sup>-hybridized carbon having two substituents  
14                  independently selected from the group consisting of H, lower alkoxy and lower  
15                  thioalkoxy.

1                   15.       A compound of claim 14, wherein B is selected from the group  
2                  consisting of:



3                   4       wherein any unlabeled R groups are independently selected from the group consisting of  
5                   H, lower alkyl, lower alkoxy and F.

1                   16.       A compound of claim 12 wherein B is selected from the group  
2                  consisting of:

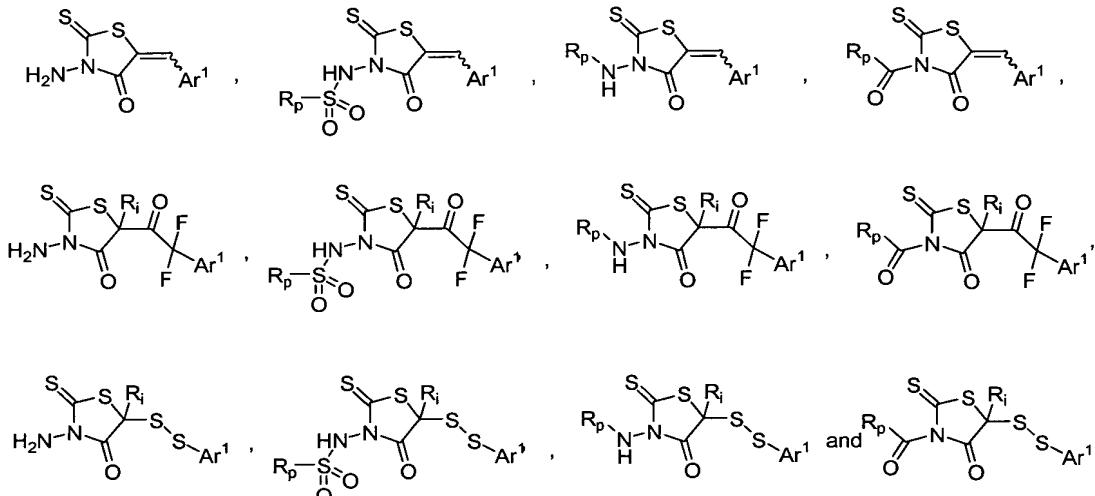


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1           **17.**    A compound of claim **12**, wherein  $\text{L}^1$  is selected from the group  
 2    consisting of  $-\text{N}(\text{R}_a)$ -,  $-\text{N}(\text{R}_a)$ -alkylene, alkylene- $\text{SO}_2-\text{N}(\text{R}_a)$ -,  $-\text{SO}_2-\text{N}(\text{R}_a)$ - and  
 3     $-\text{N}(\text{R}_a)\text{SO}_2$ -, and  $\text{X}^1$  is selected from the group consisting of H, aryl and alkyl.

1           **18.**    A compound of claim **12**, wherein  $\text{Ar}^1$  is selected from the group  
 2    consisting of substituted or unsubstituted biphenyl group, substituted or unsubstituted  
 3    bicyclic ring, substituted or unsubstituted phenyl group and substituted or unsubstituted  
 4    pyridyl.

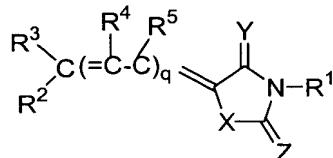
1           **19.**    A compound of claim **17**, said compound having the formula:



2

3    wherein  $\text{R}_p$  is selected from the group consisting of substituted or unsubstituted alkyl,  
 4    substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

1           **20.**    A compound of Claim **12**, said compound having the formula (III):



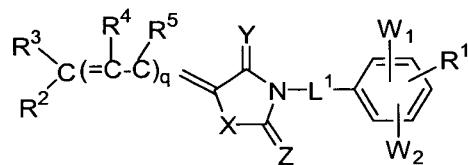
2

3    wherein

4    the subscript q is an integer of from 0 to 4;

5                   R<sup>1</sup> is hydrogen or a substituent having the formula -L<sup>1</sup>-COOH;  
6                   X is a moiety selected from -S-, -O-, and -N(R<sub>o</sub>)-, wherein R<sub>o</sub> is H or  
7   lower alkyl;  
8                   R<sup>2</sup> is a substituted or unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkyl, a substituted or  
9   unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkenyl, a substituted or unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkynyl, a  
10   substituted or unsubstituted alicyclic group having from 5-8 carbon atoms, or a group  
11   having the formula (R<sub>2a</sub>)<sub>r</sub>-(L)<sub>s</sub>-R<sub>2b</sub>-, wherein R<sub>2a</sub> and R<sub>2b</sub> can be the same or different and  
12   represent a substituted or unsubstituted heterocyclic group or a substituted or  
13   unsubstituted phenyl group, R<sub>2a</sub> can also represent a substituted or unsubstituted  
14   polycyclic group, and L represents a divalent linking group selected from methylene,  
15   ethylene, propylene, -CH=CH-, -C≡C-, -C(O)-, -O-, -S-, -S(O)-, -S(O)<sub>2</sub>-, or -N(R<sub>2c</sub>)-,  
16   wherein R<sub>2c</sub> is selected from H or lower alkyl, and the subscripts r and s are each  
17   independently 0 or 1;  
18                   R<sup>3</sup> is selected from the group consisting of H, substituted or unsubstituted  
19   (C<sub>1</sub>-C<sub>8</sub>)alkyl, substituted and unsubstituted aryl or substituted and unsubstituted  
20   heteroaryl;  
21                   Y represents O or S; and  
22                   Z represents O, S or N(R<sub>2d</sub>), wherein R<sub>2d</sub> is H or lower alkyl, or R<sub>2d</sub> and R<sup>1</sup>  
23   may be joined to form an imidazole or benzimidazole group;  
24   with the proviso that when R<sup>1</sup> is hydrogen, R<sup>3</sup> is not substituted furan.

1                   **21.**   A compound of Claim 12, said compound having the formula (V):



2                   wherein  
3                   R<sup>1</sup> is H, -OH, -COOR<sub>u</sub>, -CONR<sub>v</sub>R<sub>w</sub>, -SO<sub>2</sub>NR<sub>x</sub>R<sub>y</sub> wherein R<sub>u</sub>, R<sub>v</sub>, R<sub>w</sub>, R<sub>x</sub>  
4   and R<sub>y</sub> are H or lower alkyl, or R<sup>1</sup> is a mono-heterocyclic group selected from furan,  
5   thiophene, pyridine, pyrimidine, pyridazine, 1,3-oxathiolane, tetrazole, oxadiazole,  
6   oxazole, triazole, imidazoline, imidazole, thiazole, thiadiazole, pyrrole, piperidine,  
7   morpholine, triazine and pyrazole; and  
8                   W<sub>1</sub> and W<sub>2</sub> are independently selected from H, (C<sub>1</sub>-C<sub>8</sub>)alkyl, (C<sub>1</sub>-  
9                   (C<sub>1</sub>-C<sub>8</sub>)alkenyl, (C<sub>1</sub>-C<sub>8</sub>)alkynyl, halogen, nitro, hydroxy, perfluoroalkyl, difluoromethyl, (C<sub>1</sub>-

11  $C_8$ )alkoxy, phenoxy, phenyl( $C_1$ - $C_8$ )alkoxy, ( $C_1$ - $C_8$ )acyl, ( $C_1$ - $C_8$ )acyloxy, cyano,  
12 carbalkoxy, thio, ( $C_1$ - $C_8$ )alkylthio, ( $C_1$ - $C_8$ )alkylsulfinyl, ( $C_1$ - $C_8$ )alkylsulfonyl, amino, ( $C_1$ -  
13  $C_8$ )alkylamino, di( $C_1$ - $C_8$ )alkylamino, sulfonamido, carboxamido and ( $C_1$ -  
14  $C_8$ )alkanoylamino.

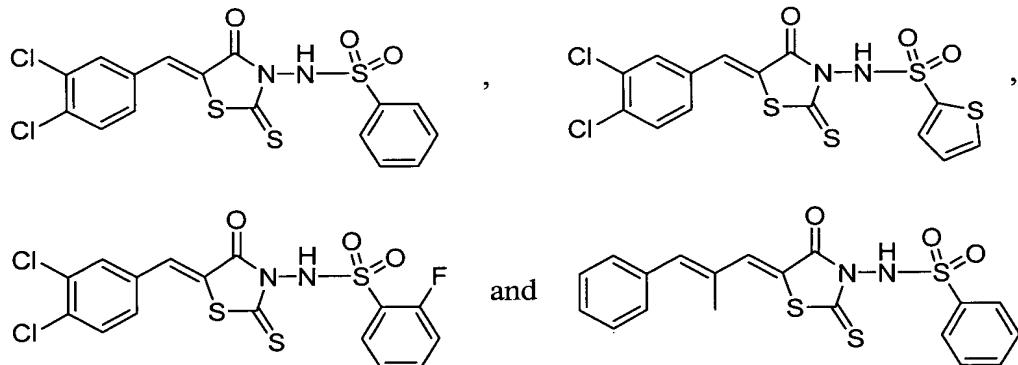
1                   **22.**    A compound of Claim 12, said compound having a formula  
2 selected from the group consisting of



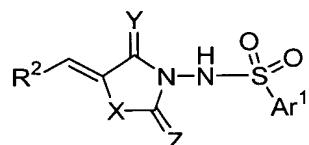
wherein

$R^2$  is a substituted or unsubstituted mono- or bi-heterocyclic group, a substituted or unsubstituted polycyclic ring, a substituted or unsubstituted alicyclic group having 5-8 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or unsubstituted biphenyl group, a substituted or unsubstituted phenylether group, a substituted or unsubstituted cinnamyl group, or a substituted or unsubstituted stilbenyl group.

1                   **23.**    The compound of Claim 22, wherein said compound is selected  
2 from the group consisting of



1                   **24.**    A compound having the formula (VIIa):



3 wherein

4  $\text{Ar}^1$  is selected from the group consisting of substituted or unsubstituted  
5 aryl and substituted or unsubstituted heteroaryl;

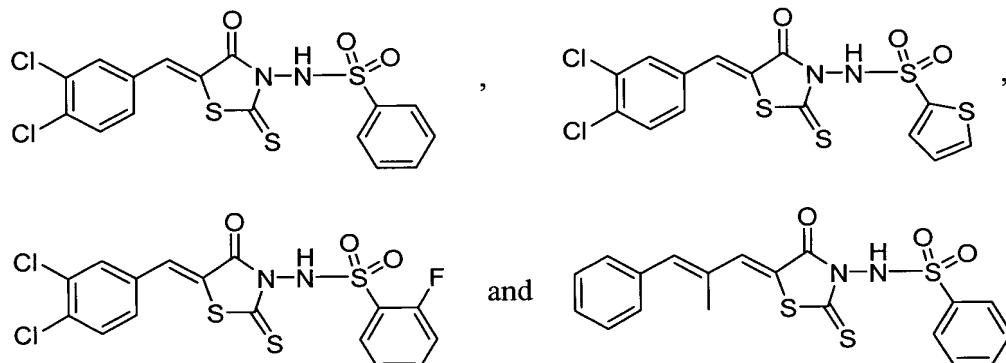
6  $\text{X}$  is selected from  $-\text{S}-$ ,  $-\text{O}-$  and  $-\text{N}(\text{R}_0)-$ , wherein  $\text{R}_0$  is H or lower alkyl;

7  $\text{Y}$  is O or S; and

8  $\text{Z}$  is O, S or  $\text{N}(\text{R}_{2d})$ , wherein  $\text{R}_{2d}$  is H or lower alkyl, or  $\text{R}_{2d}$  and  $\text{R}^1$  may be  
9 joined to form an imidazole or benzimidazole group; and

10  $\text{R}^2$  is a substituted or unsubstituted mono- or bi-heterocyclic group, a  
11 substituted or unsubstituted polycyclic ring, a substituted or unsubstituted alicyclic group  
12 having 5-8 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or  
13 unsubstituted biphenyl group, a substituted or unsubstituted phenylether group, a  
14 substituted or unsubstituted cinnamaryl group, or a substituted or unsubstituted stilbenyl  
15 group.

1 **25.** The compound of Claim 24, wherein said compound is selected  
2 from the group consisting of



3  
4  
5 **26.** A compound useful for the covalent modification of a viral RNA-  
6 dependent RNA polymerase (RdRp) protein, said compound having the formula:  
7  $\text{X}^1-\text{L}^1-\text{X}^2-\text{A}-\text{L}^2-\text{Ar}^1$   
8 wherein

5  $\text{A}$  is an electrophilic group that reacts with a cysteine residue of said viral  
6 RNA-dependent RNA polymerase protein;

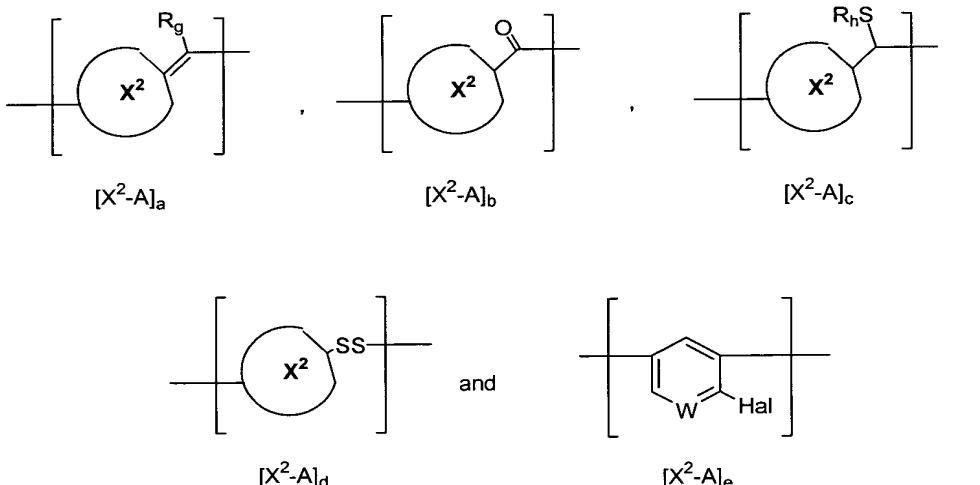
7  $\text{Ar}^1$  is a member selected from the group consisting of substituted or  
8 unsubstituted aryl and substituted or unsubstituted heteroaryl;

26                           X<sup>2</sup> is a member selected from the group consisting of substituted or  
27 unsubstituted aryl, substituted or unsubstituted heteroaryl, substituted or unsubstituted  
28 cycloalkyl, and substituted or unsubstituted heterocycloalkyl;

43                   wherein  $R_a$ ,  $R_b$ ,  $R_c$ ,  $R_d$ ,  $R_e$  and  $R_f$  are each members independently selected  
44                   from the group consisting of H, lower alkyl, lower heteroalkyl,  $-C(O)$ -lower alkyl,  
45                    $-C(O)$ -lower heteroalkyl,  $-S(O)_2$ -lower alkyl, and  $-S(O)_2$ -lower heteroalkyl;  
46                   the subscript n is an integer of from 0 to 2;  
47                   the subscript m is an integer of from 0 to 3;  
48                   the bond between  $X^2$  and A can be a single, double or triple bond,  
49                   depending on the nature of  $X^2$  and A; and  
50                   wherein when  $L^1$  and  $L^2$  may be linked together *via* a single bond,  $-O-$ ,  $-S-$   
51                   or amide group to form a new 5 to 7 membered ring.

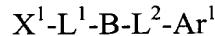
1                           **27.** A compound in accordance with claim **26**, wherein  $X^2$  is selected  
2 from the group consisting of a 5 to 7 membered cycloalkyl ring, a 5 to 7 membered  
3 heterocycloalkyl ring containing from 1 to 3 heteroatoms, an aryl group and a heteroaryl  
4 group; A is selected from the group consisting of an  $sp^2$ -hybridized carbon atom and an  
5  $sp^3$ -hybridized carbon atom;  $L^2$  is a single bond; and  $X^2$  and A are joined *via* a single or  
6 double bond.

1                           **28.**       A compound in accordance with claim **27**, wherein  $-X^2-A-$  is  
2   selected from the group consisting of:



9 of a 5-6 membered cycloalkyl, 5-6 membered heterocycloalkyl containing from 1 to 3  
10 heteroatoms, heteroaryl containing from 1 to 3 heteroatoms and aryl.

1 29. A compound having the formula (II):



3 wherein

4  $Ar^1$  is a member selected from the group consisting of substituted or  
5 unsubstituted aryl and substituted or unsubstituted heteroaryl;

6  $X^1$  is a member selected from the group consisting of -H, substituted or  
7 unsubstituted alkyl, substituted or unsubstituted aryl, substituted or unsubstituted  
8 heteroaryl, -CN, -CO<sub>2</sub>H, -SO<sub>3</sub>H, -C(O)NHOH, -NH<sub>2</sub>, -OH, -NH(lower alkyl), -O(lower  
9 alkyl), -N(lower alkyl)<sub>2</sub>, and -C(O)-NH(3-tetrazolyl);

10  $L^1$  is a divalent linking group selected from the group consisting of -O-,  
11 -S(O)<sub>n</sub>-, -N(R<sub>a</sub>)-, -C(O)-, -C(O)O-, -SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-,  
12 -N(R<sub>a</sub>)N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>-, -N(R<sub>a</sub>)-O-, =N-O-, lower alkylene,  
13 -O-lower alkylene, -S(O)<sub>n</sub>-lower alkylene, N(R<sub>a</sub>)-lower alkylene, -SO<sub>2</sub>N(R<sub>a</sub>)-lower  
14 alkylene, lower alkylene-SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-lower alkylene, lower  
15 alkylene-CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-lower alkylene, lower alkylene-N(R<sub>a</sub>)N(R<sub>b</sub>)-,  
16 -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-lower alkylene, -N(R<sub>a</sub>)-O-lower alkylene, lower alkylene-N(R<sub>a</sub>)-O-,  
17 =N-O-lower alkylene, lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower  
18 heteroalkylene, N(R<sub>a</sub>)-lower heteroalkylene, -SO<sub>2</sub>N(R<sub>a</sub>)-lower heteroalkylene, lower  
19 heteroalkylene-SO<sub>2</sub>N(R<sub>a</sub>)-, -CON(R<sub>a</sub>)-lower heteroalkylene, lower  
20 heteroalkylene-CON(R<sub>a</sub>)-, -N(R<sub>a</sub>)CON(R<sub>b</sub>)-lower heteroalkylene, lower  
21 heteroalkylene-N(R<sub>a</sub>)N(R<sub>b</sub>)-, -N(R<sub>a</sub>)SO<sub>2</sub>N(R<sub>b</sub>)-lower heteroalkylene, -N(R<sub>a</sub>)-O-lower  
22 heteroalkylene, lower heteroalkylene-N(R<sub>a</sub>)-O-, =N-O-lower alkylene and heteroaryl;

23  $L^2$  is a divalent linking group selected from the group consisting of  
24 -CH<sub>2</sub>CH<sub>2</sub>-, -(C(R<sub>c</sub>)=C(R<sub>d</sub>))<sub>m</sub>-, -O-, -S(O)<sub>n</sub>-, -N(R<sub>e</sub>)-, -C(O)-, -C(O)O-, -SO<sub>2</sub>N(R<sub>e</sub>)-,  
25 -CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-, -N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-, -N(R<sub>e</sub>)-O-, =N-O-, lower  
26 alkylene, perfluoro lower alkylene, polyfluoro lower alkylene, -O-lower alkylene,  
27 -S(O)<sub>n</sub>-lower alkylene, N(R<sub>e</sub>)-lower alkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower alkylene, lower  
28 alkylene-SO<sub>2</sub>N(R<sub>e</sub>)-, -CON(R<sub>e</sub>)-lower alkylene, lower alkylene-CON(R<sub>e</sub>)-,  
29 -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower alkylene, lower alkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
30 alkylene, -N(R<sub>e</sub>)-O-lower alkylene, lower alkylene-N(R<sub>e</sub>)-O-, =N-O-lower alkylene,

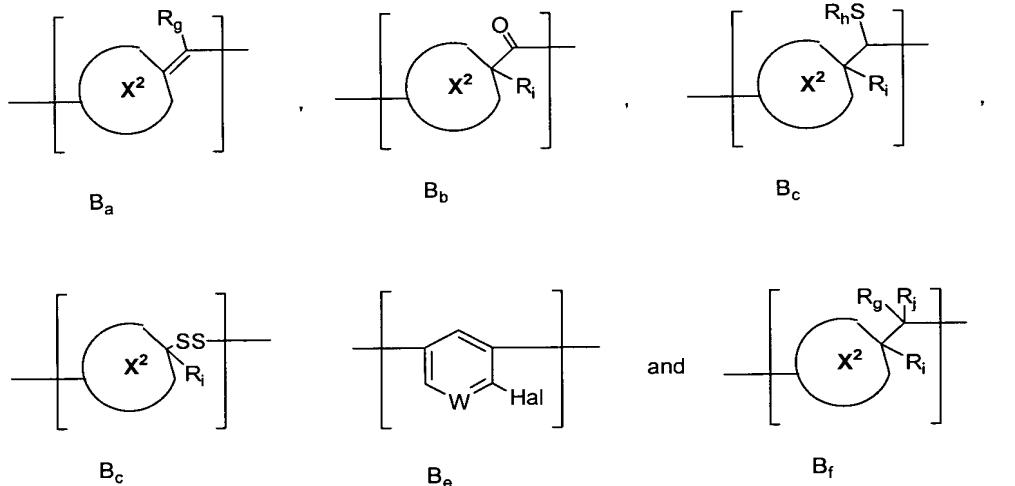
31 lower heteroalkylene, -O-lower heteroalkylene, -S(O)<sub>n</sub>-lower heteroalkylene, N(R<sub>e</sub>)-lower  
32 heteroalkylene, -SO<sub>2</sub>N(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-SO<sub>2</sub>N(R<sub>e</sub>)-,  
33 -CON(R<sub>e</sub>)-lower heteroalkylene, lower heteroalkylene-CON(R<sub>e</sub>)-, -N(R<sub>e</sub>)CON(R<sub>f</sub>)-lower  
34 heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)N(R<sub>f</sub>)-, -N(R<sub>e</sub>)SO<sub>2</sub>N(R<sub>f</sub>)-lower  
35 heteroalkylene, -N(R<sub>e</sub>)-O-lower heteroalkylene, lower heteroalkylene-N(R<sub>e</sub>)-O-,  
36 =N-O-lower alkylene, aryl and heteroaryl;

37 wherein R<sub>a</sub>, R<sub>b</sub>, R<sub>c</sub>, R<sub>d</sub>, R<sub>e</sub> and R<sub>f</sub> are each members independently selected  
38 from the group consisting of H, lower alkyl, lower heteroalkyl, -C(O)-lower alkyl,  
39 -C(O)-lower heteroalkyl, -S(O)<sub>2</sub>-lower alkyl, and -S(O)<sub>2</sub>-lower heteroalkyl;

40 the subscript n is an integer of from 0 to 2;

41 the subscript m is an integer of from 0 to 3;

42 B is selected from the group consisting of:



43

44 wherein

45 X<sup>2</sup> is a substituted or unsubstituted member selected from the group  
46 consisting of a 5-6 membered cycloalkyl, 5-6 membered heterocycloalkyl containing  
47 from 1 to 3 heteroatoms, heteroaryl containing from 1 to 3 heteroatoms and aryl;

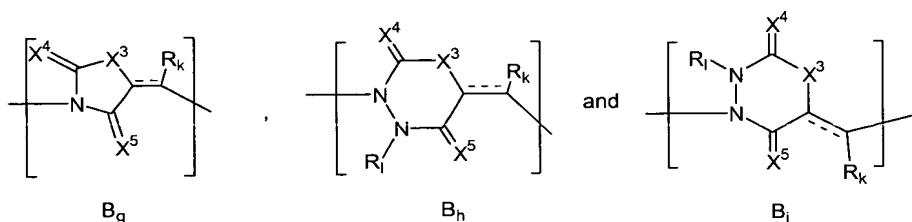
48 W is CH or N;

49 R<sub>g</sub> is selected from the group consisting of H, lower alkyl, lower alkoxy  
50 and F;

51 R<sub>h</sub> is selected from the group consisting of H, -S(O)<sub>n</sub>-lower alkyl, -S(O)<sub>n</sub>-  
52 lower heteroalkyl, -S(O)<sub>n</sub>-aryl and -S(O)<sub>n</sub>-heteroaryl;

53 R<sub>i</sub> is selected from the group consisting of H, lower alkyl, lower  
54 heteroalkyl, or a bond that links the atom bearing R<sub>i</sub> with another atom in the X<sup>2</sup> ring;

1                           **30.**    A compound in accordance with claim **29**, wherein B is selected  
2    from the group consisting of:



4 wherein

5  $R_k$  is selected from the group consisting of H, lower alkyl, lower

6 heteroalkyl and F;

7  $R_l$  is H or lower alkyl;

8  $X^3$  is selected from the group consisting of O, S,  $CH_2$ ,  $CH$ (lower alkyl),

9  $C(lower\ alkyl)_2$ , NH and N(lower alkyl);

10  $X^4$  is selected from the group consisting of O, S, NH and N(lower alkyl),

11 or  $X^4$  and the carbon atom to which it is attached represents an  $sp^3$ -hybridized carbon

12 having two substituents independently selected from the group consisting of H, lower

13 alkyl and lower heteroalkyl; and

14  $X^5$  is selected from the group consisting of O, S, NH and N(lower alkyl),

15 or  $X^5$  and the carbon atom to which it is attached represents an  $sp^3$ -hybridized carbon

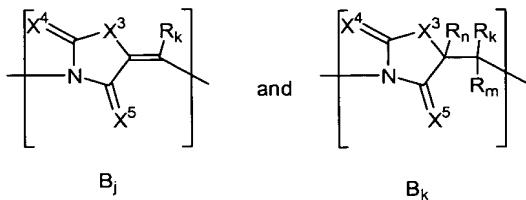
16 having two substituents independently selected from the group consisting of H, lower

17 alkyl, lower alkoxy, aryloxy, lower thioalkoxy and arylthioxy; and --- represents either

18 a single or double bond, with the proviso that when a single bond is intended, the ring

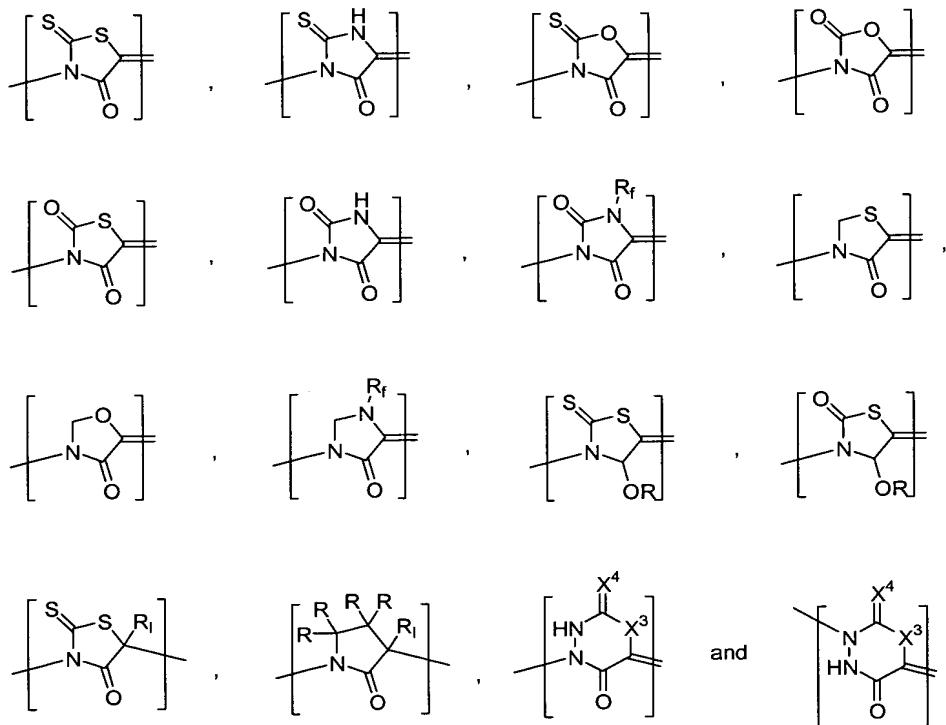
19 atom bearing said single bond bears an additional substituent selected from the group

20 consisting of H, lower alkyl, lower alkoxy and F.

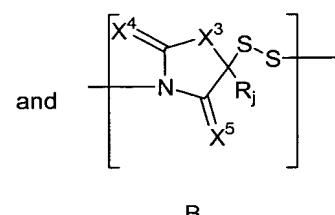
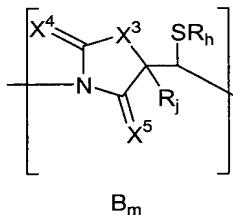
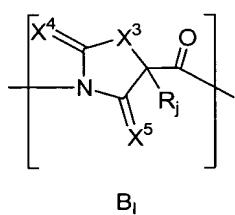


3       wherein  $R_k$ ,  $R_m$  and  $R_n$  are each independently selected from the group consisting of H, F,  
 4       lower alkyl and lower alkoxy;  $X^3$  is selected from the group consisting of O, S, C(lower  
 5       alkyl)<sub>2</sub>, NH and N(lower alkyl);  $X^4$  is selected from the group consisting of O, S, or  $X^5$   
 6       and the carbon atom to which it is attached represents an  $sp^3$ -hybridized carbon having  
 7       two substituents independently selected from the group consisting of H, lower alkyl and  
 8       lower heteroalkyl;  $X^5$  is selected from the group consisting of O, S, or  $X^5$  and the carbon  
 9       atom to which it is attached represents an  $sp^3$ -hybridized carbon having two substituents  
 10      independently selected from the group consisting of H, lower alkoxy and lower  
 11      thioalkoxy.  
 12

1           32.      A compound of claim 31, wherein B is selected from the group  
 2      consisting of:



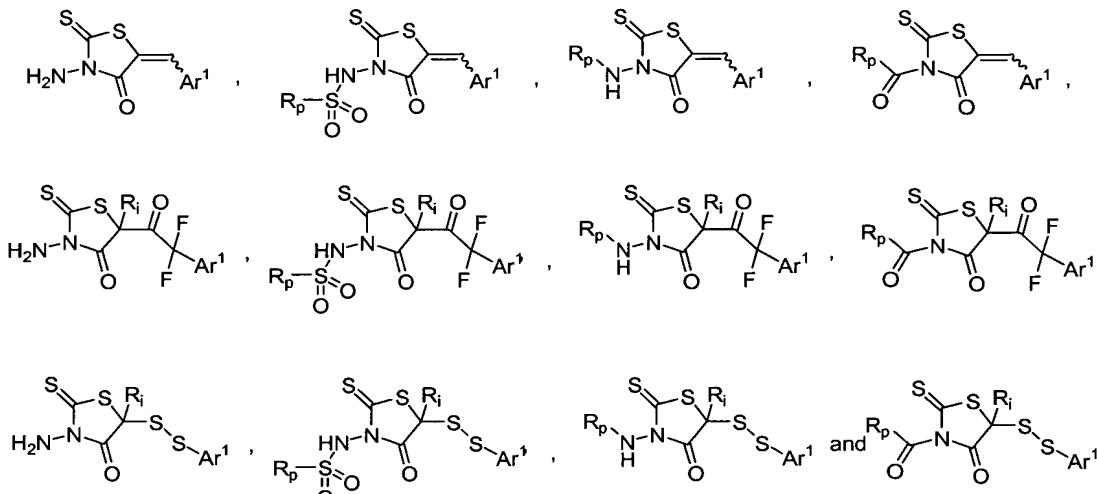
1                   **33.**    A compound of claim **29**, wherein B is selected from the group  
2    consisting of:



1                   **34.**    A compound of claim **29** wherein L<sup>1</sup> is selected from the group  
2    consisting of -N(R<sub>a</sub>)-, -N(R<sub>a</sub>)-alkylene, alkylene-SO<sub>2</sub>-N(R<sub>a</sub>)-, -SO<sub>2</sub>-N(R<sub>a</sub>)- and  
3    -N(R<sub>a</sub>)SO<sub>2</sub>-; and X<sup>1</sup> is selected from the group consisting of H, aryl and alkyl.

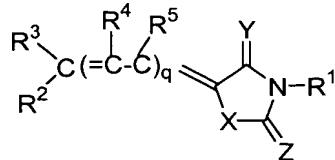
1                   **35.**    A compound of claim **29**, wherein Ar<sup>1</sup> is selected from the group  
2    consisting of substituted or unsubstituted biphenyl group, substituted or unsubstituted  
3    bicyclic ring, substituted or unsubstituted phenyl group and substituted or unsubstituted  
4    pyridyl.

1                   **36.**    A compound of claim **34**, said compound having the formula:



2                   3    wherein R<sub>p</sub> is a member selected from the group consisting of substituted or unsubstituted  
4    alkyl, substituted or unsubstituted aryl and substituted or unsubstituted heteroaryl.

1                   **37.**    A compound of Claim **29**, said compound having the formula (III):



3

4 wherein

5 the subscript q is an integer of from 0 to 4;

6 R<sup>1</sup> is hydrogen or a substituent having the formula -L<sup>1</sup>-COOH;

7 X is a moiety selected from -S-, -O-, and -N(R<sub>o</sub>)-, wherein R<sub>o</sub> is H or  
8 lower alkyl;

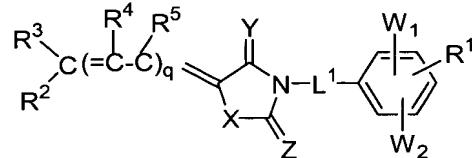
9 R<sup>2</sup> is a substituted or unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkyl, a substituted or  
10 unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkenyl, a substituted or unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkynyl, a  
11 substituted or unsubstituted alicyclic group having from 5-8 carbon atoms, or a group  
12 having the formula (R<sub>2a</sub>)<sub>r</sub>-(L)<sub>s</sub>-R<sub>2b</sub>-, wherein R<sub>2a</sub> and R<sub>2b</sub> can be the same or different and  
13 represent a substituted or unsubstituted heterocyclic group or a substituted or  
14 unsubstituted phenyl group, R<sub>2a</sub> can also represent a substituted or unsubstituted  
15 polycyclic group, and L represents a divalent linking group selected from methylene,  
16 ethylene, propylene, -CH=CH-, -C≡C-, -C(O)-, -O-, -S-, -S(O)-, -S(O)<sub>2</sub>-, or -N(R<sub>2c</sub>)-,  
17 wherein R<sub>2c</sub> is selected from H or lower alkyl, and the subscripts r and s are each  
18 independently 0 or 1;

19 Y represents O or S; and

20 Z represents O, S or N(R<sub>2d</sub>), wherein R<sub>2d</sub> is H or lower alkyl, or R<sub>2d</sub> and R<sup>1</sup>  
21 may be joined to form an imidazole or benzimidazole group;  
22 with the proviso that when R<sup>1</sup> is hydrogen R<sup>2</sup> is not substituted or unsubstituted furan.

1

38. A compound of Claim 29, said compound having the formula (V):



2

3 wherein

4 R<sup>1</sup> is H, -OH, -COOR<sub>u</sub>, -CONR<sub>v</sub>R<sub>w</sub>, -SO<sub>2</sub>NR<sub>x</sub>R<sub>y</sub> wherein R<sub>u</sub>, R<sub>v</sub>, R<sub>w</sub>, R<sub>x</sub>  
5 and R<sub>y</sub> are H or lower alkyl, or R<sup>1</sup> is a mono-heterocyclic group selected from furan,  
6 thiophene, pyridine, pyrimidine, pyridazine, 1,3-oxathiolane, tetrazole, oxadiazole,  
7 oxazole, triazole, imidazoline, imidazole, thiazole, thiadiazole, pyrrole, piperidine,  
8 morpholine, triazine and pyrazole; and

9                   W<sub>1</sub> and W<sub>2</sub> are independently selected from H, (C<sub>1</sub>-C<sub>8</sub>)alkyl, (C<sub>1</sub>-  
10 C<sub>8</sub>)alkenyl, (C<sub>1</sub>-C<sub>8</sub>)alkynyl, halogen, nitro, hydroxy, perfluoroalkyl, difluoromethyl, (C<sub>1</sub>-  
11 C<sub>8</sub>)alkoxy, phenoxy, phenyl(C<sub>1</sub>-C<sub>8</sub>)alkoxy, (C<sub>1</sub>-C<sub>8</sub>)acyl, (C<sub>1</sub>-C<sub>8</sub>)acyloxy, cyano,  
12 carbalkoxy, thio, (C<sub>1</sub>-C<sub>8</sub>)alkylthio, (C<sub>1</sub>-C<sub>8</sub>)alkylsulfinyl, (C<sub>1</sub>-C<sub>8</sub>)alkylsulfonyl, amino, (C<sub>1</sub>-  
13 C<sub>8</sub>)alkylamino, di(C<sub>1</sub>-C<sub>8</sub>)alkylamino, sulfonamido, carboxamido and (C<sub>1</sub>-  
14 C<sub>8</sub>)alkanoylamino.

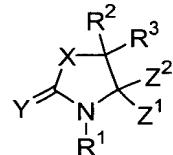
1                   **39.**    A compound of Claim 29, said compound having a formula  
2 selected from the group consisting of



4                   wherein

5                   R<sup>2</sup> is a substituted or unsubstituted mono- or bi-heterocyclic group, a  
6 substituted or unsubstituted polycyclic ring, a substituted or unsubstituted alicyclic group  
7 having 5-8 carbon atoms, a substituted or unsubstituted phenyl group, a substituted or  
8 unsubstituted biphenyl group, a substituted or unsubstituted phenylether group, a  
9 substituted or unsubstituted cinnamyl group, or a substituted or unsubstituted stilbenyl  
10 group.

1                   **40.**    A compound having the formula:



2                   wherein

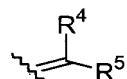
3                   X is a member selected from the group consisting of O, S, NR<sup>11</sup> and  
4 CR<sup>11</sup>R<sup>12</sup> wherein R<sup>11</sup> and R<sup>12</sup> are each members independently selected from the group  
5 consisting of H, substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkyl, substituted or unsubstituted  
6 (C<sub>1</sub>-C<sub>8</sub>)alkoxy and substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)acyl;

7                   Y is a member selected from the group consisting of O and S, or taken  
8 together with the carbon atom to which it is attached forms a methylene group;

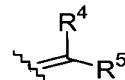
9                   Z<sup>1</sup> and Z<sup>2</sup> are each members independently selected from the group  
10 consisting of H and substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkoxy, or taken together form an  
11 oxo moiety;

13                   R<sup>1</sup> is a member selected from the group consisting of substituted or  
14    unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkyl, substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkylamino, substituted or  
15    unsubstituted di(C<sub>1</sub>-C<sub>8</sub>)alkylamino, substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)acylamino, amino,  
16    H, substituted or unsubstituted aryl(C<sub>1</sub>-C<sub>8</sub>)alkyl, substituted or unsubstituted  
17    heteroaryl(C<sub>1</sub>-C<sub>8</sub>)alkyl, substituted or unsubstituted heterocycloalkyl and -NHSO<sub>2</sub>-Ar<sup>1</sup>,  
18    wherein Ar<sup>1</sup> is selected from the group consisting of substituted or unsubstituted aryl and  
19    substituted or unsubstituted heteroaryl; and

20                   R<sup>2</sup> and R<sup>3</sup> are each members independently selected from the group  
21    consisting of halo, substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkyl and substituted or  
22    unsubstituted (C<sub>1</sub>-C<sub>8</sub>)acyl, or taken together form a group of the formula:



23  
24                   wherein R<sup>4</sup> and R<sup>5</sup> are each members independently selected from the  
25    group consisting of H, substituted or unsubstituted aryl, and substituted or unsubstituted  
26    heteroaryl, with the proviso that no more than one of R<sup>4</sup> and R<sup>5</sup> are H;  
27    with the proviso that when Z<sup>1</sup> and Z<sup>2</sup> taken together form an oxo moiety and R<sup>2</sup> and R<sup>3</sup>  
28    taken together form a group of the formula:



29  
30                   R<sup>1</sup> is not substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkyl or H

1                   **41.**    A compound in accordance with claim **40**, wherein R<sup>1</sup> is selected  
2    from the group consisting of amino and substituted or unsubstituted -NHSO<sub>2</sub>-Ar<sup>1</sup>.

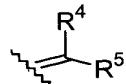
1                   **42.**    A compound in accordance with claim **40**, wherein Z<sup>1</sup> and Z<sup>2</sup> taken  
2    together are oxo.

1                   **43.**    A compound in accordance with claim **40**, wherein Y is O or S and  
2    Z<sup>1</sup> and Z<sup>2</sup> taken together are oxo.

1                   **44.**    A compound in accordance with claim **40**, wherein X and Y are S  
2    and Z<sup>1</sup> and Z<sup>2</sup> taken together are oxo.

1                   **45.**    A compound in accordance with claim **40**, wherein R<sup>1</sup> is selected  
2    from the group consisting of substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)alkylamino, substituted

3 or unsubstituted di(C<sub>1</sub>-C<sub>8</sub>)alkylamino, substituted or unsubstituted (C<sub>1</sub>-C<sub>8</sub>)acylamino,  
4 amino, and -NHSO<sub>2</sub>-Ar<sup>1</sup>, wherein Ar<sup>1</sup> is selected from the group consisting of substituted  
5 or unsubstituted aryl and substituted or unsubstituted heteroaryl; X and Y are each  
6 independently selected from the group consisting of O and S; Z<sup>1</sup> and Z<sup>2</sup> taken together are  
7 oxo; and R<sup>2</sup> and R<sup>3</sup> taken together are a group having the formula:



wherein R<sup>4</sup> and R<sup>5</sup> are each members independently selected from the group consisting of H, substituted or unsubstituted aryl, and substituted or unsubstituted heteroaryl, with the proviso that only one of R<sup>4</sup> and R<sup>5</sup> is H.

1 46. A pharmaceutical composition, comprising a pharmaceutically  
2 acceptable carrier and a therapeutically or prophylactically effective amount of a  
3 compound of any one of claims 1, 9, 12, 24, 26, 29 and 40.

1 47. A method for the treatment or prevention of a viral infection,  
2 comprising  
3 administering to a subject suffering from or at risk for said viral infection  
4 an effective amount of a compound of any one of claims 1, 9, 12, 24, 26, 29 and 40.

1 48. The method of Claim 47, wherein said viral infection is hepatitis C  
2 virus infection.

1 49. The method of Claim 47, wherein said compound is administered  
2 in combination with a therapeutically effective amount of an antiviral agent.

1 50. The method of Claim 49, wherein said antiviral agent is an  
2 interferon.

1 51. A method for treating or preventing a viral infection, comprising  
2 administering to a subject in need thereof a therapeutically effective  
3 amount of a compound that binds to a cysteine residue in the RNA-dependent RNA  
4 polymerase (RdRp) protein of a virus forming a covalent bond.

1 52. The method of Claim 51, wherein said RdRp protein is NS5B.

1                   **53.** The method of Claim **51**, wherein said viral infection is hepatitis C  
2 virus infection.

1                   **54.** The method of Claim **51**, wherein said compound comprises an  
2 electrophilic group that reacts with a cysteine residue of said RdRp protein.

1                   **55.** The method of Claim **54**, wherein said electrophilic group is  
2 selected from the group consisting of an activated double or triple bond, an electrophilic  
3 center, a carboxylic acid or carboxylic acid derivative, a sulfur-containing group and an  
4 activated or unactivated carbonyl group.